

**IN THE CLAIMS:**

1. (Previously Presented) A microwave applicator comprising a coaxial electrical input and a waveguide filled with dielectric, an inner conductor of the coaxial input extending longitudinally within one end of the waveguide to launch microwaves in the  $TM_{01}$  mode to travel to the distal end face of the waveguide so that microwaves are transmitted when the distal end face is contacted by biological tissue to be treated.
2. (Previously Presented) A microwave applicator as claimed in claim 1 in which the inner conductor is axially aligned with the waveguide.
3. (Previously Presented) A microwave applicator as claimed in claim 1 in which the waveguide is a circular waveguide.
4. (Previously Presented) A microwave applicator as claimed in claim 1 in which the distal end face is substantially flat and normal to the axis of the waveguide.
5. (Previously Presented) A microwave applicator as claimed in claim 1 in which the distal end face is flat or slightly domed and centered on the axis of the waveguide.
6. (Previously Presented) A microwave applicator as claimed in claim 1 in which distal end face has a polymer coating.
7. (Previously Presented) A microwave applicator as claimed in claim 1 in which the length and diameter of the waveguide, the length of the inner conductor within the waveguide, and the permittivity of the dielectric material are selected so that at the

designed operating frequency, the waveguide is in resonance.

8. (Previously Presented) A microwave applicator as claimed in claim 1 in which the waveguide is adapted so the in operation, when the distal end face is in contact with biological tissue to be treated, forwards transmission from the distal end face is enhanced by the relative phase of reflections from the distal end face and the input to the waveguide; and when the distal end face is in air or gas, reflections to the input are enhanced by the relative phase of reflections from the distal end face and the input to the waveguide.

9. (Currently Amended) A microwave applicator comprising:

a waveguide,

a coaxial electrical input with an inner conductor extending longitudinally within one end of the waveguide to launch microwaves in the  $TM_{01}$  mode that travel to the distal end of the waveguide and are transmitted into biological tissue to be treated, and

a diaphragm of low loss dielectric material being provided within the waveguide so as to extend laterally of the waveguide to reflect the microwaves traveling along it, the longitudinal location of the diaphragm being selected in relation to the ends of the waveguide so that the phase of reflections from the diaphragm and said ends serve to reduce or cancel rearward reflections in the coaxial input.

10. (Previously Presented) A microwave applicator as claimed in claim 9 in which the thickness of the diaphragm, and the permittivity of the dielectric material from which it is made are selected to determine the magnitude of the rearward reflection of microwaves from the diaphragm for optimum cancellation of the rearward reflection in the coaxial

input.

11. (Previously Presented) A microwave applicator as claimed in claim 9 which is air-filled.

Claims 12-18 Canceled.